

Relationship between States of Physical or Mental and Sleeping Habits among University Students in Thailand and Japan

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Abstract

Recently, there has been a concern that stress adversely affects college students' life, and the need to understand the mental conditions has been intensifying. From the aspects of rest and stress buster, sleeping is markedly important. Here we carried out a questionnaire survey on physical and mental conditions and sleeping habits in college students in Japan and Thailand to investigate their relationship.

Results of actual and ideal height, body weight, percent body fat, and BMI in college students in Japan and Thailand revealed that there was a gap between actual build and ideal build and ideal body build tends to be slimmer than the build preferable for good health, and it was found necessary to give advice on healthy build. Percentages of college students that visited a clinic were almost comparable in Japan and Thailand, and rates of college students taking over-the-counter medicine were higher in Thailand than in Japan. Allergy was found at comparable ratios in college students in Japan and Thailand. College students in Japan exhibited a significant correlation between negative factors in mental conditions and time required for falling asleep. They required longer time to fall asleep due to more stress than college students in Thailand, and as a result there was a shortage of sleep. Furthermore, college students in Japan regularly felt tired compared with those in Thailand, which seemed to originate from lack of sleep.

Key words : sleeping habit, states of physical and mental, university students, Japan, Thailand

I . Introduction

Recently, rates of college enrollment have elevated nearly to 50% and young people with a variety of academic abilities and careers are enrolled in colleges. College life accounts for a certain position in the life style of a number of students, and it has become increasingly necessary to understand the mental conditions of college students. In particular, education of pharmacists in Japan shifted to a six-year term system in April 2006, and mental health of college students are expected to change greatly.

To date, investigation of stress-related factors in college students,¹⁾ development of a stress management program, and investigation of its effect ²⁾ have been reported. Furthermore,

health promotion in nurses at colleges in Hong Kong,³⁾ influence of smoking on QOL,⁴⁾ exercise habits during vacation in 21 West-ern countries,⁵⁾ stress in students in the department of dentistry,⁶⁾ and psychological problems in medical students ⁷⁾ have been reported, whereas there has been no report on mental health in college students in Japan and Thailand.

Human sleep has its own cycle and people are controlled by the circadian clock and sleeping substances to be awake in the daytime and asleep at night. However, wide prevalence of convenience stores has caused sleep disturbance and lack of sleep. Since lack of sleep causes loss of concentration, memory, and thought, it not only disturbs daily life but also becomes a cause of traffic accidents.⁸⁾ According to the survey on lifestyles conducted nationwide in 2000 by national

Table 1-1 Physical characteristics of university students in Japan

	Male	n = 51	Female	n = 94
	Mean ± S.D.	Range	Mean ± S.D.	Range
height (cm)	172.1 ± 5.2	164 - 185	158.8 ± 5.7	145 - 168
weight (kg)	63.3 ± 9.1	50 - 83	49.0 ± 5.4	38 - 63
Body fat percentage (%)	16.4 ± 4.2	8.0 - 27.1	23.3 ± 3.1	15.6 - 32.3
BMI (kg/m ²)	21.3 ± 1.9	17.6 - 27.6	19.5 ± 1.6	16.2 - 24.2

Table 1-2 Physical characteristics of university students in Thailand

	Male	n = 44	Female	n = 92
	Mean ± S.D.	Range	Mean ± S.D.	Range
height (cm)	171.9 ± 4.7	155 - 183	160.7 ± 5.0	150 - 174
weight (kg)	60.7 ± 8.4	50 - 82	48.2 ± 6.4	20 - 76
Body fat percentage (%)	18.8 ± 5.9	8.3 - 30.4	23.3 ± 4.1	12.0 - 33.0
BMI (kg/m ²)	20.5 ± 2.6	16.8 - 27.0	18.7 ± 2.1	8.0 - 25.1

broadcasting company NHK, the average sleep time of the whole Japanese was seven hours 23 minutes.⁹⁾ In 2004, a survey on sleep dynamics was carried out with the subjects of 14,000 in 28 countries in the world,¹⁰⁾ and the average sleep time was shortest in Japanese, and 41% of them answered “six hours or shorter”. The average sleep time eight hours or longer was found in 18% of Japanese and 40% of Thais, and it was evident that sleep status was greatly different between Japanese and Thais.

Here we carried out a questionnaire survey on the physical and mental conditions and sleeping habits of college students in Japan and Thailand to investigate their relationship.

II . Methods

1. Subjects

A questionnaire titled as “survey on living conditions and habits” was distributed to 51 male and 94 female college students in Japan and 44 male and 92 female college students in Thailand and later collected. They were juniors of the department of pharmacy, and the average age was 22.0 ± 0.3 years and 21.0 ± 0.1 years in male and female students in Japan, respectively, and 20.9 ± 0.8 years and 20.9 ± 0.7 years in male and female students in Thailand, respectively. For ethical consideration, a survey was conducted anonymously to protect personal data.

Percent body fat was measured with an Omron body fat monitor scale HBF 300. Body Mass Index (BMI) was calculated by the following formula: Body weight [kg] / (Height [m])². Our own questionnaire comprised a list of gender, age, height, body weight, percent body fat, mental and

physical conditions, eat-ing habits, and sleeping habits. As to physical conditions, “physical capacity”, “current health conditions”, and “health conditions one year ago” were evaluated by a 10-grade scale of “bad (1) to excellent (10)”. As to mental conditions, “degrees of achieving goals”, “sense of purpose”, and “mental toughness” for positive factors and “anxious mind”, “stress”, and “troubles” for negative factors were also evaluated by a 10-grade scale of “weak (little) (1) to strong (much) (10)”. As to sleeping habits, “sleep time”, “depth of sleep”, and “degrees of sleep” were evaluated by a 10-grade scale of “unsatisfactory (1) to satisfactory (10)”, while sleep time and time required for falling asleep were answered.

2. Relationship between mental and physical conditions and sleeping habits

The relationship between mental and physical conditions and sleeping habits were evaluated by logistic regression analysis. For statistical analysis, Windows JMP ver. 6.0 (SAS Institute Inc.) was used.

III . Results

1. Height, body weight, percent body fat, and BMI in college students in Japan and Thailand

Height, body weight, percent body fat, and BMI in college students in Japan and Thailand are shown in Table 1-1 and 1-2. Average height was 172.1 cm and 158.8 cm and average body weight was 63.3 kg and 49.0 kg in male and female college students in Japan, respectively. Average percent body fat was 16.4% and 23.35% and average BMI was 21.3 kg/m² and 19.5 kg/m² in male and female college students in

Table 2-1 Numbers of respondents based on needs for body change of university students in Japan

	Increase		Not change		Decrease	
	male(%)	female(%)	male(%)	female(%)	male(%)	female(%)
Height	68.0	41.5	32.0	51.1	0.0	7.4
Weight	18.0	1.1	52.0	23.9	30.0	75.0
Body fat percentage	4.2	3.5	35.4	15.1	60.4	81.4

Table 2-2 Numbers of respondents based on needs for body change of university students in Thailand

	Increase		Not change		Decrease	
	male(%)	female(%)	male(%)	female(%)	male(%)	female(%)
Height	63.6	72.2	34.1	27.8	2.3	0.0
Weight	25.0	1.7	45.5	21.1	29.5	62.2
Body fat percentage	1.8	4.4	34.1	23.3	64.1	72.2

Japan, respectively. On the other hand, average height was 171.9 cm and 160.7 cm and average body weight was 60.7 kg and 48.2 kg in male and female college students in Thailand, respectively. In addition, average percent body fat was 18.8% and 23.35% and average BMI was 20.5 kg/m² and 18.7 kg/m² in male and female college students in Thailand, respectively (Table 1-1, 1-2).

As to height, body weight, and percent body fat, a survey was carried out with a questionnaire of a three-grade scale of “wish to be taller (wish to increase) (1) to wish to be shorter (wish to reduce) (3)”, and calculated proportions are shown in Table 2-1 and 2-2. As a result, it was found that a large proportion of male college students in Japan and Thailand wished to be taller, while a smaller proportion of female college students in Thailand wished to be taller compared with female college students in Japan. On the other hand, a large proportion of female college students in Japan and Thailand had the wish to “lose body weight” and the tendency was more remarkable in Japan. The proportion of college students wishing to “reduce percent body fat” was largest in both Japan and Thailand and the tendency was more remarkable in female students in both countries (Table 2-1, 2-2).

2. Physical and mental conditions in college students in Japan and Thailand

As to physical conditions in college students in Japan and Thailand, a questionnaire survey was carried out and the number of

students feeling tired during the last one month and disease status were evaluated by a four-grade scale. Allergy was evaluated by a four-grade scale of “requirement of medicine(no, sometimes, every day) and no allergy”, and their percentages are shown in Table 3-1 and 3-2. As a result, all college students in Japan felt tired during the last one month. On the other hand, the most often observed frequency that college students in Thailand felt tired during the last one month was “once or twice”. As to the disease during the last one month, 62.1% of college students in Japan responded “no disease”, while more than half of college students in Thailand answered “present” and took over-the-counter medicine. As to allergy, it was found that 40.0% and 33.1% of college students in Japan and Thailand, respectively, took medicine (Table 3-1, 3-2).

As to physical conditions, “body capacity”, “current health conditions”, and “health conditions one year ago” were evaluated by “bad (1) to excellent (10)”, while as to mental conditions, “degrees of achieving goals”, “sense of purpose”,

Table 3-1 Numbers of respondents based on physical health experienced of university students in Japan

Fatigue experienced	No fatigue	0.0 %
	Yes, 1-2 times	11.9 %
	Yes, 3-4 times	14.2 %
	Yes, more than 4 times	73.9 %
Illness experienced	No illness	62.1 %
	Yes, small illness and self-care	22.1 %
	Yes, small illness and use health care service	15.9 %
	Yes, serious illness and hospitalized	0.0 %
Disease experienced	No disease	60.0 %
	Yes, but use no medicines	16.6 %
	Yes, and use medicines sometimes	21.4 %
	Yes, and always use medicines	2.1 %

Table 3-2 Numbers of respondents based on physical health experienced of university students in Thailand

Fatigue experienced	No fatigue	17.6 %
	Yes, 1-2 times	48.5 %
	Yes, 3-4 times	17.6 %
	Yes, more than 4 times	16.2 %
Illness experienced	No illness	33.1 %
	Yes, small illness and self-care	55.9 %
	Yes, small illness and use health care service	11.0 %
Disease experienced	Yes, serious illness and hospitalized	0.0 %
	No disease	66.9 %
	"Yes, but use no medicines"	19.9 %
	Yes, and use medicines sometimes	11.8 %
	Yes, and always use medicines	1.5 %

and “mental toughness” for positive factors, and “anxious mind” , “stress” , and “troubles” for negative factors were also evaluated by a 10-grade scale of “weak (little) (0) to strong (much) (10)”, and the results are shown in Table 4-1 and 4-2. As a result, scores as to the physical conditions in college students in Japan were higher than those in college students in Thailand. In addition, among mental conditions, the scores of the positive factors were lower in college students in Japan than in those in Thailand. Furthermore, among mental conditions, scores of negative factors were higher in college students in Japan than in those in Thailand (Table 4-1, 4-2).

3. Sleeping habits of college students in Japan and Thailand

As to sleeping habits, questionnaire scores of “sleep time” , “depth” , and “degree” by a 10-grade scale of “unsatisfactory (1) to satisfactory (10)” , as well as sleep time and time required for falling asleep, are shown in Table 5-1 and 5-2. As a result, sleep time of college students in Japan was shorter than

that of college students in Thailand. Time required for falling asleep was comparable between the two countries. Degrees of satisfaction as to sleep time were about 4.7 in college students in Japan, which was markedly lower than about 7.1 to 7.2 in college students in Thailand. On the other hand, depth and degrees of sleep did not differ greatly between the two countries (Table 5-1, 5-2).

The results by logistic regression analysis on the relationship between sleep time or time required

for falling asleep and sleeping habits are shown in Table 6-1 and 6-2. There was a significant correlation between time required for falling asleep and negative factors in mental conditions in female college students in Japan and Thailand and between time required for falling asleep and negative factors in mental conditions in college students in Japan. On the other hand, time required for falling asleep had no significant correlation with either physical or mental conditions. Taken together, compared with college students in Thailand, college students in Japan had “anxious mind” , “stress” and “troubles” in mental conditions more frequently, which affected time required for falling asleep (Table 6-1, 6-2).

IV . Discussion

Measurement of height, body weight, and percent body fat in college students in Japan and Thailand revealed results similar to those carried out with college students in the different college department in Thailand.¹¹⁾ Results of BMI

Table 4-1 Measures of physical and mental health status of university students in Japan

	Male	n = 51	Female	n = 94
	Mean ± S.D.	Range	Mean ± S.D.	Range
Physical health status	19.4 ± 5.9	3-30	18.0 ± 4.8	5-30
Positive mental health status	18.4 ± 6.4	3-30	17.0 ± 5.5	3-30
Negative mental health status	17.6 ± 7.0	4-30	19.0 ± 5.8	5-30

Table 4-2 Measures of physical and mental health status of university students in Thailand

	Male	n=44	Female	n=92
	Mean ± S.D.	Range	Mean ± S.D.	Range
Physical health status	20.5 ± 3.4	10-30	21.2 ± 3.2	15-30
Positive mental health status	23.1 ± 3.5	15-30	24.6 ± 3.1	13-30
Negative mental health status	15.1 ± 5.5	3-24	13.5 ± 4.7	4-27

Table 5-1 Sleeping habit and measures of sleeping for university students in Japan

	Male Mean ± S.D.	n = 51 Range	Female Mean ± S.D.	n = 94 Range
Hours of sleep (hr)	6.3 ± 1.7	3.0 - 9.0	6.0 ± 1.1	3.0 - 8.0
Sleeping introduction hours (min)	15.3 ± 13.1	0.0 - 60.0	15.5 ± 17.0	0.0 - 120.0
Overall sleeping				
Hours of sleep	4.7 ± 2.9	1 - 10	4.7 ± 2.8	1 - 10
Deep sleeping	6.9 ± 2.5	1 - 10	6.5 ± 2.7	1 - 10
Sleeping satisfaction	6.0 ± 2.4	1 - 10	6.1 ± 2.4	1 - 10

Table 5-2 Sleeping habit and measures of sleeping for university students in Thailand

	Male Mean ± S.D.	n = 44 Range	Female Mean ± S.D.	n = 92 Range
Hours of sleep (hr)	6.9 ± 1.3	3.0 - 9.0	6.9 ± 1.1	4.5 - 10.0
Sleeping introduction hours (min)	16.2 ± 13.5	0.0 - 60.0	15.5 ± 17.2	0.0 - 120.0
Overall sleeping				
Hours of sleep	7.2 ± 1.5	3 - 10	7.1 ± 1.5	3 - 10
Deep sleeping	7.4 ± 1.8	3 - 10	7.6 ± 1.8	1 - 10
Sleeping satisfaction	7.5 ± 1.5	4 - 10	7.3 ± 1.8	3 - 10

Table 6-1 Association of measures of physical health status, mental health status, sleeping with sleeping habit of university students in Japan

	Hours of sleep (hr)		Sleeping introduction hours (min)	
	S.E.	<i>p</i>	S.E.	<i>p</i>
Total				
Physical health status	0.128	0.6933	0.009	0.1646
Positive mental health status	0.126	0.7997	0.009	0.5060
Negative mental health status	0.127	0.1181	0.010	0.0105*
Hours of sleep	0.149	0.0001*	0.009	0.2241
Deep sleeping	0.123	0.0109*	0.011	0.0001*
Sleeping satisfaction	0.135	0.0001*	0.010	0.0018*
Male				
Physical health status	0.195	0.3628	0.019	0.5174
Positive mental health status	0.194	0.6119	0.019	0.6609
Negative mental health status	0.195	0.3659	0.019	0.5323
Hours of sleep	0.224	0.0005*	0.019	0.6969
Deep sleeping	0.202	0.0560	0.020	0.0409*
Sleeping satisfaction	0.220	0.0005*	0.019	0.3747
Female				
Physical health status	0.174	0.1138	0.011	0.2026
Positive mental health status	0.169	0.5422	0.011	0.6835
Negative mental health status	0.170	0.2815	0.011	0.0057*
Hours of sleep	0.203	0.0001*	0.011	0.0908
Deep sleeping	0.172	0.0964	0.014	0.0001*
Sleeping satisfaction	0.177	0.0031*	0.012	0.0014*

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Sleeping satisfaction	0.177	0.0031*	0.012	0.0014*

showed that female college students in both countries had a strong wish to lose body weight despite no obese tendency. These results were consistent with the results reported by Yamashita et al¹²⁾, that there was a gap between actual body structure and ideal body build and ideal body structure tended to be slimmer than the body shape preferable for good health. They also mentioned that the trend started when they were elementary school students. Continuously losing weight was associated with inappropriate behaviors such as drug abuse.¹³⁾ In addition, it is important to correctly evaluate obesity before going on a diet, and it is known that unnecessary weight loss could cause endocrine disruption in young people.^{14,15)} Therefore, it was thought necessary to give advice to these students.

Human sleep has its own cycle and people are controlled by the circadian clock and sleeping substances to be awake in the daytime and asleep at night. However, wide prevalence of convenience stores has caused sleep disturbance and lack of sleep. Since lack of sleep causes loss of concentration, memory, and thought, it not only disturbs daily life but also becomes a cause of traffic accidents.⁸⁾ In 2004, a survey on sleep dynamics was carried out with the subjects of 14,000

people in 28 countries in the world.¹⁰⁾ The average sleep time was shortest in Japanese, and 41% of them answered “six hours or shorter” . It was reported that the average sleep time eight hours or longer was in 18% of Japanese and 40% of Thais, and it was evident that sleep status was greatly different. These results are consistent with those in the present study. Furthermore, the results of the present study revealed that college students in Japan felt tired regularly compared with those in Thailand. The great difference between the two countries seemed to originate from shorter sleep time in college students in Japan. Therefore, it was suggested that measures to improve sleeping habits should be taken. Moreover, degrees of satisfaction in college students in Japan were lower than those in Thailand, which suggested a potential improvement by instructions on habits.

Percentages of college students in Japan and Thailand that visited a clinic were comparable and 11.0% and 15.9%, respectively. Nevertheless, the proportion taking over-the-counter medicine was about 2.5-fold higher in Thailand than in Japan, and those in Thailand seemed to take medicine regularly. This is because a relatively wider range of medicine can be bought at drug stores in Thailand compared with Japan

and self-medication has been prevailed. With regard to allergy, an increase in allergy patients was reported in Japan,¹⁶⁾ but the results of the questionnaire survey in the present study revealed a similar proportion of college students had allergy in Japan and Thailand.

Results on physical and mental conditions showed that physical conditions of college students in Japan and Thailand were comparable, but as to mental conditions, scores for positive factors were higher in college students in Thailand and negative factors were higher in college students in Japan. These results suggest that college students in Japan have “anxious mind”, “stress”, and “troubles” more often and exhibit markedly negative mental conditions. It can be said that college students are physically mature adults, but mentally immature for adults.¹⁷⁾ In particular, negative factors had a significant correlation with time required for falling asleep, and college students in Japan tended to have more stress due to lack of sleep compared with college students in Thailand, which seemed to result in longer time to fall asleep and a vicious cycle.

V . Conclusions

Despite no obese tendency, female college students in both Japan and Thailand showed a strong wish to lose weight, and it was found that it was necessary to give advice because unnecessary weight loss might cause endocrine disruption.

Compared with college students in Thailand, college students in Japan felt tired regularly, and it was shown that short sleep time was one factor and it was found necessary to give advice on sleeping habits.

As to physical conditions, percentages of college students taking over-the-counter medicine were markedly high in Thailand and the necessity to survey the medicine they took was suggested. In addition, percentages of college students that had allergy were comparable between Japan and Thailand. College students in Japan had “anxious mind”, “stress”, and “troubles” more often and showed markedly negative mental conditions. In particular, negative factors had a significant correlation with the time required for falling asleep, and college students in Japan tended to have more stress than those in Thailand, which seemed to result in longer time for falling asleep.

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